Amended claims:

1. **(original)** An apparatus for determining at least one orientation parameter of an elongate object having a tip contacting a surface at a contact point, said apparatus comprising:
   a) a projector on said elongate object for illuminating said surface with a probe radiation in a predetermined pattern from a first point of view;
   b) a detector on said elongate object for detecting a scattered portion of said probe radiation returning from said surface to a second point of view;
   c) a unit for determining said at least one orientation parameter from a difference between said probe radiation and said scattered portion.

2. **(original)** The apparatus of claim 1, wherein said at least one orientation parameter comprises an inclination angle θ between an axis of said elongate object and a normal to said surface at said contact point.

3. **(original)** The apparatus of claim 2, wherein said at least one orientation parameter further comprises a roll angle ψ around said axis.

4. **(original)** The apparatus of claim 1, wherein said surface comprises a plane surface.

5. **(original)** The apparatus of claim 1, wherein said predetermined pattern comprises an asymmetric pattern.

6. **(original)** The apparatus of claim 5, wherein said asymmetric pattern is selected from the group consisting of line sets, ellipses, rectangles and polygons.

7. **(original)** The apparatus of claim 1, wherein said projector comprises a structured light optic for projecting said probe radiation onto said plane surface in said predetermined pattern.

8. **(original)** The apparatus of claim 7, wherein said structured light optic comprises at least one element selected from the group consisting of holographic elements, diffractive elements, refractive elements and reflective elements.

9. **(original)** The apparatus of claim 1, wherein said elongated object is selected from the group consisting

of jotting implements, pointers, robotic arms and canes.

10. **(original)** The apparatus of claim 9, wherein said jotting implements are selected from the group consisting of pens, pencils and styluses.

11. **(currently amended)** An apparatus for determining at least one orientation parameter of an elongate object having a tip contacting a plane surface, and a normal to said plane surface, said apparatus comprising:

a) a projector on said elongate object for illuminating said plane surface with a probe radiation at an angle σ to ~~said~~ an axis of said elongate object;

b) a detector on said elongate object offset from said projector for detecting a scattered portion of said probe radiation returning from said plane surface at a predetermined scatter angle τ to said axis;

c) a timing unit for deriving said at least one orientation parameter from a detection time of said scattered portion.

12. **(currently amended)** The apparatus of claim 11, wherein said at least one orientation parameter comprises an inclination angle θ between ~~an~~ said axis of said

elongate object and a normal to said surface at said contact point.

13. **(original)** The apparatus of claim 12, wherein said at least one orientation parameter further comprises a roll angle ψ around said axis.

14. **(original)** The apparatus of claim 11, further comprising a scanning arrangement for varying said angle σ in a scan pattern.

15. **(original)** The apparatus of claim 14, wherein said scanning arrangement comprises a uniaxial scanner for varying said angle σ by introducing an x-deflection γ_x.

16. **(original)** The apparatus of claim 14, wherein said scanning arrangement comprises a biaxial scanner for varying said angle σ by introducing an x-deflection γ_x and a y-deflection γ_y.

17. **(original)** The apparatus of claim 14, wherein said scanning arrangement comprises a biaxial scanner for varying said angle σ and said scan pattern is selected from the group consisting of raster scan

patterns, line scan patterns and Lissajous figures.

18. **(original)** The apparatus of claim 11, wherein said projector comprises a structured light optic for projecting said probe radiation onto said plane surface in a predetermined pattern.

19. **(original)** The apparatus of claim 18, wherein said structured light optic comprises at least one element selected from the group consisting of holographic elements, diffractive elements, refractive elements and reflective elements.

20. **(original)** The apparatus of claim 18, wherein said predetermined pattern is selected from the group consisting of line sets, ellipses, rectangles and polygons.

21. **(original)** The apparatus of claim 11, wherein said projector is mounted above said detector.

22. **(original)** The apparatus of claim 11, wherein said detector further comprises a narrow field angle reception unit for admitting to said detector only

said scattered portion returning from said plane surface at said predetermined scatter angle τ.

23. **(original)** The apparatus of claim 22, wherein said narrow field angle reception unit is selected from the group consisting of a cylindrical lens, a collimating lens, a thick aperture, a system of apertures, and a slit.

24. **(original)** The apparatus of claim 11, wherein said detector comprises a photodetector array.

25. **(original)** The apparatus of claim 24, further comprising a centroid computation unit for determining a centroid of said scattered portion.

26. **(original)** The apparatus of claim 11, further comprising an optic for shaping said probe radiation into a scan beam.

27. **(original)** The apparatus of claim 11, wherein said elongated object is selected from the group consisting of jotting implements, pointers, robotic arms and canes.

28. **(original)** The apparatus of claim 27, wherein said jotting implements are selected from the group consisting of pens, pencils and styluses.

29. **(original)** The apparatus of claim 11, wherein said timing unit is located on said elongate object.

30. **(original)** The apparatus of claim 11, wherein said projector comprises a single frequency emitter for emitting said probe radiation at a single frequency f.

31. **(original)** A method for determining at least one orientation parameter of an elongate object having a tip contacting a surface at a contact point, said method comprising:

a) illuminating said surface with a probe radiation in a predetermined pattern from a first point of view on said elongate object;

b) detecting a scattered portion of said probe radiation returning from said surface at a second point of view on said elongate object;

c) determining said at least one orientation parameter from a difference between said probe radiation and said scattered portion.

32. **(original)** The method of claim 31, wherein said predetermined pattern is a scan pattern.

33. **(original)** The method of claim 31, wherein said predetermined pattern comprises an asymmetric pattern.

34. **(original)** The method of claim 31, wherein said at least one orientation parameter comprises at least one Euler angle.

35. **(original)** A method for determining an inclination angle θ between an axis of an elongate object having a tip contacting a plane surface, and a normal to said plane surface, said method comprising:

a) providing a projector on said elongate object;

b) providing a detector on said elongate object, said detector being offset from said projector;

c) illuminating said plane surface with a probe radiation at an angle σ to said axis from said projector;

d) detecting a scattered portion of said probe radiation returning from said plane surface at a predetermined scatter angle τ to said axis with said detector;

e) a timing unit for deriving said inclination angle θ from a detection time of said scattered portion.

36. **(original)** The method of claim 35, wherein said angle σ is varied in a scan pattern.

37. **(original)** The method of claim 36, wherein said scan pattern is selected from the group of uniaxial scan patterns and biaxial scan patterns.